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09/905,068	07/16/2001	Song Zhang	0023-0038	5988

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EXAMINER	
BHANDARI, PUNEET	
ART UNIT	**PAPER NUMBER**
2666	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/905,068	ZHANG ET AL.	
	Examiner	Art Unit	
	Puneet Bhandari	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 8-23* is/are rejected.

7)☒ Claim(s) *6 and 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *7/16/2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Drawings

1. The drawings are objected to because word *"priority is misspelled"* in Fig. 10 in block 1020 & 1070.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 9 & 23 are objected to because of the following informalities:

Regarding claim **9**, the phrase "the duration" in line 1 should be replaced with "a duration" and word "the" in line 1 after "duration of" should be cancelled.

Regarding claim **23**, the phrase "the duration" in line 2, after "setting" should be replaced with "a duration".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims **1-4** are rejected under 35 U.S.C. 102(e) as being anticipated by Ruszczyk (US 6,205,150).

Regarding claim **1**, Fig. 4 anticipates *"A system for managing flow of data in a network device"* also disclosed in column 5, lines 61-67 - column 6, lines 1-9; comprising:

Fig. 4,block 62 anticipates *"a plurality of high priority queues configured to store data unit information"* also disclosed in column 5, line 67- column 6, line 1.

Fig. 4,block 66 anticipates *"a plurality of low priority queues configured to store data unit information"* also disclosed in column 6, lines 10-13.

An arbiter configured to selectively bypass low priority queue is anticipated by *"scheduler 68"* disclosed in Fig. 4,block 68 or column 7, lines 13-16 based on a size of

data unit in the low priority queue is anticipated by *"scheduler determines the weights based on the size of data units"* disclosed in column 6, lines 40-47.

Regarding claim **2**, wherein the arbiter includes:

A high priority arbiter configured to perform arbitration on plurality of high priority queues is anticipated by *"scheduler 64"* disclosed in column 6, lines 1-5 or in Fig. 4,block 64.

A low priority arbiter configured to perform arbitration on a plurality of low priority queues when enabled is anticipated by *"scheduler 68"* disclosed in Fig. 4,block 68 or column 7, lines 13-16

Regarding claim **3**, wherein the low priority arbiter is enabled when none of the plurality of high priority queues contain notification is anticipated by "*where lower priority data is transmitted after higher priority data"* disclosed in column 4, lines 60-65.

Regarding claim **4,** wherein the high priority arbiter and the low priority arbiter are each configured to perform round-robin arbitration on their respective queues is anticipated by *"varying priorities by using scheduling methods such as round-robin"* disclosed in column 1, lines 30-37.

5. Claims **11-16, 18 & 20-22** are rejected under 35 U.S.C. 102(e) as being anticipated by Anderson (US 6,523,098).

Regarding claim **11**, Fig. 5 anticipates "a method for managing flow of data in a network device" also disclosed in column 5, lines 35-56; comprising

Selecting a high priority data unit is anticipated by "*determining weather one or more high priority request exist"* disclosed in column 5, lines 35-46 or Fig 5 block 504.

Selecting low priority data unit if no high priority data unit can be selected is anticipated by *"no pending high priority operation exist"* disclosed in column 4, lines 31-40 or Fig 5 block 508; and comparing the size of the selected data low priority data units with a threshold is anticipated by *"determine the availability of resources (threshold) to service the low priority request"* disclosed in column 5, lines 48-51 or anticipated by interaction between blocks 508 and 510 in fig 5;

Regarding claim **12**, the method of claim 11, further comprising:

Preventing at least one low priority data unit from being selected for a duration based on comparison of the size of a low priority and the threshold is anticipated by *"where a comparison is made between the low priority request and resources available in order to send the low priority request"* as disclosed by interaction between the block 508,510 in fig.5

Regarding claim **13**, method of claim 12 further comprising generating a delay signal of a duration based on the size of a low priority data unit is anticipated by *"wait signal to delay sending the low priority request until the resource are available"* as disclosed by interaction between blocks 510 and 502 in fig. 5.

Regarding claim **14**, the method of wherein each of said selecting act includes performing arbitration is anticipated by *"arbiter receiving information from multiple queue"* disclosed in column 2, lines 36-40.

Regarding claim **15**, method of claim 11, wherein threshold relates to rate of processing by a processor is anticipated by *"calculation of available resources*

(threshold) by the scheduler or resource busy detector" disclosed in column 4, lines 40-57.

Regarding claim **16**, method of claim 13, further comprising controlling sending data unit based on the size of data units, where said controlling has a latency associated therewith is anticipated by "*interaction between block 500 (one or more request waiting) and block (510) are resources available (block 510)"* as disclosed in Fig 5.

Regarding claim **18**, Fig 5 anticipates *"a system for managing data flow in a network device"*, also disclosed in column 5, lines 35-56,comprising:

Fig.5 block 504 anticipates "*A plurality of high priority queues configured to store notification corresponding to the high priority packets"*

Fig. 5 block 508 anticipates "*A plurality of low priority queues configured to store notification corresponding to the low priority packets"*

A high priority arbiter configured to perform arbitration on the plurality of high priority queues and to select a notification is anticipated by *"high priority operation detector indicates a status signal"* disclosed in column 4, lines 31-40.

A low priority arbiter configured to perform arbitration on plurality of low priority queues and to select a notification when no notification are present in the plurality of high priority queues is anticipated by *"no pending high priority operation exist low priority queue is serviced"* disclosed in column 4, lines 31-40 or Fig 5 block 508;

Circuitry configured to compare a data unit size associated with the selected notification with a threshold is anticipated by *"determine the availability of resources*

(threshold) to service the low priority request" disclosed in column 5, lines 48-51 or anticipated by interaction between blocks 508 and 510 in fig 5, and to remove the low priority queue that contained the selected notification from further arbitration for a programmable duration when the unit size exceeds the threshold (are resources available) is anticipated by *"where a comparison is made between the low priority request (size of low priority data unit), resources available (threshold)"* as disclosed by interaction between the block 508,510,502 in fig.5

A processor configured to receive the selected notifications and to assemble output data based on the selected notification is anticipated by *"arbiter services the request"* disclosed in column 5, lines 55-57.

Regarding claim **20**, the system of claim18 wherein the threshold is based on a processing rate of the processor is anticipated by *"calculation of available resources (threshold) by the scheduler or resource busy detector"* disclosed in column 4, lines 40-57.

Regarding claim **21**, Fig. 5 anticipates "*a method for processing high priority data units and low priority data units in a network device"* also disclosed in column 5, lines 35-56, comprising

Performing arbitration on high priority notifications that correspond to the high priority data units is anticipated by "*determining weather one or more high priority request exist"* disclosed in column 5, lines 35-46 or Fig 5 block 504 and outputting selected high priority data notifications to a processor until no high priority notification

remains *"no pending high priority operation exist"* disclosed in column 4, lines 31-40 or Fig 5 block 508;

Fig. 5 block 508 anticipates *"enabling arbitration on low priority notification that correspond to the low priority data units"* disclosed in column 4, lines 31-41;

Fig. 5 block 508 anticipates "*performing arbitration on the low priority notifications and outputting a selected low priority notification to processor"* also, disclosed in column 5, lines 45-57;

Comparing a data unit size associated with selected low priority notification with a threshold is anticipated by *"determine the availability of resources (threshold) to service the low priority request"* disclosed in column 5, lines 48-51 or anticipated by interaction between blocks 508 and 510 in fig 5;

Excluding a queue that contained the selected low priority notification from subsequent arbitration for a duration when the data unit size exceeds the threshold is anticipated by *"where a comparison is made between the low priority request (size of low priority data unit), resources available (threshold)"* as disclosed by interaction between the block 508,510,502 in fig.5.

Regarding claim **22**, the system of claim 21 wherein the threshold is based on a processing rate of the processor is anticipated by *"calculation of available resources (threshold) by the scheduler or resource busy detector"* disclosed in column 4, lines 40-57.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims **5 & 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk (US 6,205,150) in view of Anderson (US 6,523098).

Regarding claim **5**, Ruszczyk (US 6,205,150) teaches all the limitations of claims 5 (see 102 rejection for claim 1 above) except Ruszczyk (US 6,205,150) does not expressly disclose a comparison element configured to compare a size of data unit with one or more threshold and to output one or more control signals based on the comparison. Anderson (US 6,523098) discloses method to determine the availability of resources (threshold) to service the low priority request (disclosed in column 5, lines 48-51 or anticipated by interaction between blocks 508 and 510 in fig 5). At the time the invention was made it would have been obvious to a person in ordinary skill in art to add the method to determine the availability of resources (threshold) to service the low priority request of Anderson (US 6,523098) to the arbiter of Ruszczyk (US 6,205,150). One of ordinary skill in art would have been motivated to do this to provide a system controller capable of managing data flows (see column 6, lines 16-20 of Anderson (US 6,523098).

Regarding claim **10**, Ruszczyk (US 6,205,150) teaches all the limitations of claims 10 (see 102 rejection for claim 5 above) except Ruszczyk (US 6,205,150) does not expressly disclose wherein the one or more threshold comparison element is based

on a processing rate of a processor. Anderson (US 6,523098) discloses calculation of available resources (threshold) depends on scheduler or resource busy detector (see column 4, lines 40-57of Anderson (US 6,523098)). At the time the invention was made it would have been obvious to a person in ordinary skill in art to add the method to determine the availability of resources (threshold) based on the processing rate of the scheduler to service the low priority request of Anderson (US 6,523098) to the arbiter of Ruszczyk (US 6,205,150). One of ordinary skill in art would have been motivated to do this to provide a system controller capable of managing data flows (see column 6, lines 16-20 of Anderson (US 6,523098).

8. Claim **8** rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk (US 6,205,150) in view of Wicki et al (US 5,892,766). Ruszczyk (US 6,205,150) teaches all the limitations of claims 8 (see 102 rejection for claim 1 above) except Ruszczyk (US 6,205,150) does not expressly disclose a flow control device coupled to the arbiter and configured to determine a size of data units and provide a flow control signal when the size exceeds the threshold. Wicki et al (US 5,892,766) discloses a flow control receiver unit in an arbiter to receive buffer status message indicating the space capacity of input buffer (see column 5-lines 65-67 and column 6, lines 1-15 Wicki et al (US 5,892,766)). At the time the invention was made it would have been obvious to a person in ordinary skill in art to add the functionality indicating the space capacity of input buffer of Wicki et al (US 5,892,766) to the arbiter of Ruszczyk (US 6,205,150). One of ordinary skill in art would have been motivated to do this to grant an access to output port if there is an

adequate space in receiving input buffer (see column 5, lines 65-67 of Wicki et al (US 5,892,766)).

9. Claim **9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk (US 6,205,150) in view of Wicki et al (US 5,892,766) as applied to claim 8 above, and further in view of Luijten et al (US2001/0021174). Ruszczyk (US 6,205,150) in view of Wicki et al (US 5,892,766) teaches all the limitations of claims 9 (see 103 rejection for claim 8 above) except Ruszczyk (US 6,205,150) in view of Wicki et al (US 5,892,766) does not expressly disclose a system wherein a duration of one or more delay signals is based on the latency of flow control device. Luijten et al (US2001/0021174) discloses a process of defining flow control latency (see paragraph 0030 lines 1-29). At the time invention was made it would have been obvious to a person in ordinary skill in art to add the process of defining the flow control latency of Luijten et al (US2001/0021174) to the system of Ruszczyk (US 6,205,150) and Wicki et al (US 5,892,766). One of ordinary skill in art would have been motivated to do this to account for flow control latency in the data packet access controller (see paragraph 0010 lines 16-21 of Luijten et al (US2001/0021174)).

10. Claim **17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 6,523098) further in view of Luijten et al (US2001/0021174). Anderson (US 6,523098) teaches all the limitations of claims 17 (see 102 rejection for claim 13 above) except Anderson (US 6,523098) does not expressly disclose setting the durationof delay signal relates to associated latency associated with the controlling. Luijten et al (US2001/0021174) discloses a process of defining flow control latency (see

paragraph 0030 lines 1-29). At the time invention was made it would have been obvious to a person in ordinary skill in art to add the process of defining the flow control latency of Luijten et al (US2001/0021174) to the system of Anderson (US 6,523098). One of ordinary skill in art would have been motivated to do this to account for flow control latency in the data packet access controller (see paragraph 0010 lines 16-21 of Luijten et al (US2001/0021174)).

11. Claim **19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 6,523098) in view of Kuo et al (US 2003/0021230).

Anderson (US 6,523098) teaches all the limitations of claims 19 (see 102 rejection for claim 18 above) except Anderson (US 6,523098) does not expressly disclose flow control device coupled to the processor to provide flow control signal when a size of data unit associated with notification being processed by the processor becomes too high. Kuo et al (US 2003/0021230) discloses a flow control device that detects the congestions and notifies to the scheduler accordingly (see paragraph 0036, lines 1-8 of Kuo et al (US 2003/0021230)). At the time the invention was made it would have been obvious to a person in ordinary skill in art to add the functionality flow control device coupled to the processor to provide flow control signal when a size of data unit associated with notification being processed by the processor becomes too high as disclosed by Kuo et al (US 2003/0021230) to the a method for processing high priority data units and low priority data units in a network device of Anderson (US 6,523098). One of ordinary skill in art would have been motivated to do this to enables switching

system to provide flow control in a bandwidth efficient manner (see paragraph 0025, lines 1-8 Kuo et al (US 2003/0021230)).

12. Claim **23** is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 6,523098) in view of Luijten et al (US2001/0021174). Anderson (US 6,523098) teaches all the limitations of claims 23 (see 102 rejection for claim 22 above) except Anderson (US 6,523098) does not expressly disclose setting the duration based on a latency associated with controlling flow of notifications to the processor. Luijten et al (US2001/0021174) discloses a process of defining flow control latency (see paragraph 0030 lines 1-29). At the time invention was made it would have been obvious to a person in ordinary skill in art to add the process of defining the flow control latency of Luijten et al (US2001/0021174) to the system of Anderson (US 6,523098). One of ordinary skill in art would have been motivated to do this to account for flow control latency in the data packet access controller (processor) (see paragraph 0010 lines 16-21 of Luijten et al (US2001/0021174)).

Allowable Subject Matter

13. Claim **6,7** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim **6** prior art of record Ruszczyk (US 6,205,150) fails to teach a mask register configured to prevent low priority arbiter from selecting one or more low priority queue for a duration defined by the one or more delay signals.

Regarding claims 7, it is further limiting claim 6 and thus would be allowable over prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Puneet Bhandari whose telephone number is 571-272-2057. The examiner can normally be reached on 9.00 AM To 5.30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Puneet Bhandari
Examiner
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